STRATEGY RESEARCH PROJECT

THEATER BALLISTIC MISSILE DEFENSE: WHO'S FIGHT IS IT?

BY

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ABSTRACT

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Theater Missile Defense (TMD) is a high-profile mission area that sits atop many CINC's Integrated Priority Lists. While all the Services are putting funds into TMD, turf battles have broken out over who should control the TMD battle.

The first step in clarifying the missile defense control issue is to disregard the current definitions of theater missile, attack operations, and active defense. Many of the TMD-specific missions are already conducted as part of counterair operations; however, one mission area - defense against in-flight theater ballistic missiles - remains unique. That particular mission should be controlled by an anti-ballistic missile expert, responsible to the Area Air Defense Commander.

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PREFACE

As Scud missiles rained on allied forces in the Gulf War, we recognized our lack of a coherent missile defensive capability and our failure to build a roadmap to acquire such a capability. Theater Missile Defense (TMD) thus moved into the spotlight as a mission area that demanded and received attention from every Service.

From the beginning, turf battles arose. The Army - the only Service with anti-missile experience - claimed primacy. The Air Force, saying missile defense was part of air defense, thought they should be in charge. The Navy initiated programs so they could join the fight.

Joint doctrine, developed to clarify command and control issues, only muddied the waters by introducing new terms and definitions. Ballistic missiles were only part of the emerging missile threat. Joint doctrine specified that cruise missiles and air-to-surface missiles comprised the rest of the missile threat; taken together, these missile threats are termed "theater missiles." While most military members agree that the Area Air Defense Commander (AADC) would conduct missile defense, they cannot agree who would wear the AADC hat. The Air Force, Army, and Navy all had valid claims to the hat.

One of the primary reasons there is a difference over who should be in charge of missile defense is that we are stuck

using the definitions of theater missiles and the concepts of active defense, passive defense, and attack operations. We must move away from these arbitrary delineations.

Cruise missiles should be treated as aircraft. Attack operations are no different than other offensive counterair missions against ground targets (i.e., surface attack/ interdiction missions). Passive defense remains the same regardless of the threat.

The only mission truly unique to the missile threat is active defense against TBMs. All other counter-missile missions fall into previously established mission areas.

We need to establish an anti-ballistic missile commander to conduct this defense. This commander should report to the AADC to ensure anti-ballistic missile measures are closely tied to other air defense priorities. The commander with the preponderance of anti-missile capability -- in all probability Army or Navy -- should control this particular aspect of the overall air defense mission.

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THEATER BALLISTIC MISSILE DEFENSE: WHO'S FIGHT IS IT?

The recent Pakistani and Indian nuclear tests, which caught many intelligence experts by surprise, refocused attention on weapons of mass destruction (WMD) and the threat they pose to global stability. India and Pakistan typify the activities of many developing countries around the world - the quest to obtain WMD and the means to deliver them (both countries possess ballistic missiles capable of delivering the weapons). Weapon delivery technology is relatively easy to acquire - from acquisition on the open market to buying technical expertise to indigenous production. The growing access to nuclear, chemical, and biological weapons and the means to deliver those weapons pose a significant threat to the United States, its forces, and its allies.

As more countries acquire the capability to inflict mass casualties, the requirement, as well as the urgency, to develop and field credible defensive capability increases. The Army, Air Force, and Navy are all developing new weapon systems to counter this threat. In 1997 the Joint Staff formed a new organization - the Joint Theater Air and Missile Defense Organization - to oversee requirements development for the air and missile defense mission area. Joint Publications 3-01, *Joint Doctrine for Countering Air and Missile Threats*, and 3-01.5, *Doctrine for Joint Theater Missile Defense*, were

rewritten, placing more emphasis on the joint nature of air and missile defense.

While the Joint Staff and Services took actions to increase the military's defensive capability, differences arose as to who would be responsible for conducting the air and missile defense function. The Air Force treats both air and missile threats the same. Air Force Doctrine Document 2-1.1 states,

> Providing air superiority is a core competency for the United States Air Force (USAF). Counterair is the primary function used in gaining and maintaining air superiority and consists of offensive and defensive operations to destroy or neutralize enemy air *and missile* forces. [emphasis added][1]

On the other hand, the Army claims missile threats are so different from air-breathing threats that the defensive missions are distinct. The United States Army War College Joint Force Land Component Commander (JFLCC) Primer states,

> Theater Missile Defense [TMD] is similar but distinct from Air Defense. Operations to protect the force from missile threats are fundamentally different from those taken to defend from the counterair threat.[2]

Air defense and TMD definitions promulgated by the Joint Staff only muddy the already turbulent waters. The purpose of this paper is to offer a new perspective on the TMD versus air defense debate. It will deal with definitions, target sets, and functional responsibilities. If all the Services can agree to common terms and common missions, a truly effective missile

defense architecture may be built and conducted by the appropriate authority.

THEATER MISSILE DEFENSE

The recent events in South Asia, as well as Iraq's use of Scud missiles during the Gulf War, have focused attention on Theater Missile Defense. Joint Publication 3-01.5 provides the following definition:

> Theater missile applies to ballistic missiles, cruise missiles, and air-to-surface missiles whose targets are within a given theater of operation. . . . Of primary concern are the increasingly accurate ballistic and cruise missiles armed with conventional and WMD warheads.[3]

While ballistic, cruise, and air-to-surface missiles are all "missiles," there are distinct differences among them. Cruise missiles and air-to-surface missiles, powered by air-breathing motors, fly through the atmosphere, using aerodynamic lift to change altitude and direction. Given their ability to attack from any azimuth, friendly forces must have a highly developed capacity to differentiate friend from foe, ensuring an effective defense while minimizing fratricide.

Ballistic missiles, on the other hand, follow easily calculated trajectories. Once their motors cease boosting, these missiles simply pass through air and space on a ballistic path, dictated by the laws of physics. Identification is easy -

if it's coming your way and will impact near friendly forces or assets, it is a threat.

The theater missile definition is a convenient grouping, but the different missile types demand different engagement tactics and procedures. Thus, a singular theater missile defensive concept will not work.

Using the Joint Pub's theater missile definition, defensive capabilities designed to counter ballistic missiles, cruise missiles, and certain long-range air-to-surface missiles form the core of the theater missile defense mission. Joint Pub 3-01.5 specifically spells out TMD as follows:

> Theater missile defense applies to the identification, integration, and employment of forces supported by other theater and national capabilities to detect, identify, locate, track, minimize the effects of, and/or destroy enemy TMs. This includes the destruction of TMs on the ground and in flight, their ground-based launchers and supporting infrastructure; TM-capable ships and vessels in port or at sea; and enemy aircraft armed with air-to-surface missiles. TMD operations are accomplished by integrating a mix of mutually supportive passive defense, active defense, attack operations, and C4I measures.[4]

TMD is typically described as a structure composed of a foundation upon which "pillars" support a roof (the symbolic TMD capability). The components of the structure are battle management/ command, control, communications, computers, and intelligence (BM/C4I); attack operations; active defense; and passive defense.

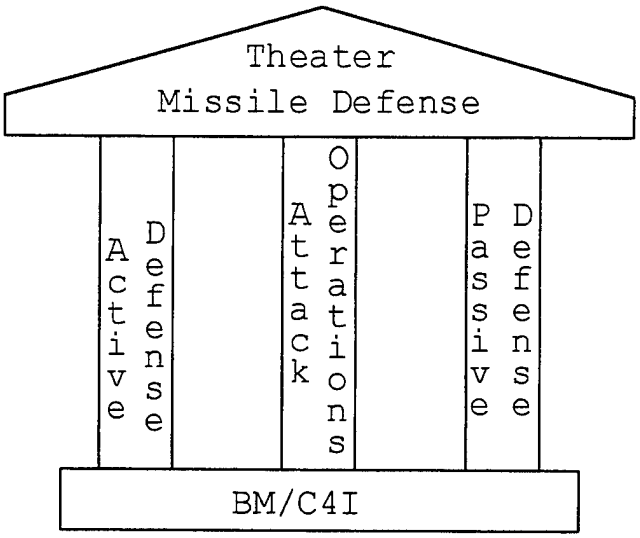

Figure 1. Theater Missile Defense

The first component, BM/C4I, is the command and control architecture vital to the entire defense against incoming TM threats. The entire TMD architecture must be fully interoperable and linked with all components/units/agencies involved in defense against any threats. The ability to detect, identify, track, and assess airborne targets and rapidly disseminate this information is so vital to the three pillars of TMD that the entire architecture would collapse without an effective BM/C4I foundation. Simply put, BM/C4I is the glue that holds TMD together.

The next component, attack operations, aims to destroy an enemy's ability to employ Theater Missiles. Joint Publication 3-01.5 defines attack operations as "offensive actions intended

to destroy and disrupt enemy TM capabilities before, during, and after launch."[5] The Publication further identifies the preferred method of countering the adversary's TM capability as attacking and destroying the missiles before they can be launched, thus keeping friendly forces and assets from being at risk. Armed forces may conduct attack operations against any portion of the overall launch capability and support infrastructure from launch platforms to command and control nodes to missile production facilities.

> Attack operations can be preemptive or reactive as part of counterair, strategic attack, interdiction, fire support, maneuver, ASW, antisurface warfare, strike warfare, amphibious operations, or special operations.[6]

Attack operations in the TMD arena may be considered counterair in Air Force parlance, fire support in Army circles, or antisurface warfare in the Navy. While the mission is clear - destroying enemy theater missile capability, preferably before launch - the name associated with such missions is not. Any array of weapons systems may be used to conduct these attack operations. From air-to-ground fighters and bombers to Army Tactical Missile System (ATACMS) and special forces to Tomahawk Land Attack Missiles (TLAMs) and Naval Gunfire Support, the weapon system and/or Service is not important - only the mission effects are. Destroying an enemy's ability to launch TMs

greatly reduces the stress placed on defensive systems designed to intercept airborne missiles.

If the enemy is successful in launching TMs, friendly forces must possess the third component of TMD - active defense - to destroy those missiles before they reached their intended targets. *Doctrine for Joint Theater Missile Defense* states the role of active defense operations is "to protect selected assets and forces from attack by destroying TM airborne launch platforms and/or TMs in flight."[7] Numerous TMD studies suggest a single defensive system cannot provide the certainty of defense demanded by the various Commanders-in-Chief. Using Army air defense artillery assets like PATRIOT, the proposed Navy Theater Wide high altitude anti-missile system, or the Air Force's proposed Airborne Laser, the Joint Force Commander (JFC) must design an integrated and inter-operable system of overlapping defenses to protect friendly forces and critical assets. Boost-phase interceptors like the Airborne Laser will destroy enemy ballistic missiles over enemy territory, before they can deploy submunitions. Wide-area systems like the Theater High Altitude Area Defense (THAAD) and Navy Theater Wide Defense are being designed to destroy enemy ballistic missiles and/or warheads while outside the earth's atmosphere, where any chemical or biological agents released from the interception will pose no threat to terrestrial forces. The long range of intercept also

allows the opportunity to assess the first engagement to determine whether another engagement is necessary.

Should the threat missile continue its path, the final chance to destroy in-flight ballistic and cruise missiles comes from the point or terminal defensive systems. PATRIOT, the Medium Extended Air Defense System (MEADS), if developed, and Navy Area Defense System are designed to intercept missiles that have managed to leak through the other layers of defense. Unlike boost phase and wide area defenses that are designed to intercept ballistic missiles only, terminal defenses are also the last layer of defense against air-breathing threats like aircraft, helicopters, and UAVs. This dual-use capability of anti-airbreather and anti-ballistic missile defense exacerbates the disagreement over who should control the TMD battle.

Should any of the threat missiles manage to penetrate the layered defensive screen, commanders are responsible for directing the final component of the TMD architecture -- passive defense -- to mitigate the effects of the "leakers." From dispersion to camouflage and hardening to protective clothing, these passive defense measures increase the survivability of friendly forces and assets.

Effective passive defenses limit the damage done by those threats that make it to their targets. Effective active defense lessens the chance that any threat missiles will "leak" through

the defensive umbrella. Effective attack operations reduce the stress placed on active defense. Effective BM/C4I makes the entire process work together. Attack operations, active defense, or passive defense could be conducted in isolation, but BM/C4I allows all pillars to operate most effectively.

The timely flow of critical data greatly enhances the overall effectiveness of the entire TMD architecture. Early warning satellites detect and analyze missile launch information, feeding the data into a network that links all aspects of TMD. Commanders launch attack operations assets against the calculated launch point. Active defense forces focus their target acquisition radars to specific volumes of space, increasing the effective range of their interceptors. Commanders on the ground are alerted to predicted impact areas and times, allowing forces to take cover and don protective gear. Theater Missile Defense is a time-critical mission area demanding a high degree of interoperability, coordination, and flexibility. Putting the right person in charge of this vital mission is one of the Joint Force Commander's (JFC's) most important decisions.

AIR SUPERIORITY AND COUNTERAIR OPERATIONS

The Air Force thinks the designation of TMD commander is simple. Theater missile threats should be treated as any other

air threat and will be part of the overall counterair mission conducted to attain air superiority.

Air and space superiority is one of the Air Force's core competencies. Air forces carry out specific missions to gain control the aerospace environment. Among these air superiority missions is counterair, which, according to Air Force Doctrine Document 2-1.1, *Counterair Operations*, "consists of offensive and defensive operations to destroy or neutralize enemy air and missile forces."[8]. Air Force doctrine specifies that both offensive and defensive missions are required to eliminate air and missile threats and establish control of the air.

> Counterair is coordinated and integrated at all levels to exploit the mutually beneficial effects of these offensive and defensive operations to destroy or neutralize enemy air and missile threats both before and after launch. . . . Operations are conducted over enemy and friendly territory. They range from taking the initiative of seeking out and destroying the enemy's ability to conduct air and missile attacks to taking reactive measures to minimize the effectiveness of enemy air and missile attacks.[9]

Offensive Counterair (OCA) operations are actions taken to destroy air and missile threats on or over enemy territory. Instead of waiting for enemy forces to penetrate friendly territory, OCA operations seek out and destroy threats before they can be employed. Air Force doctrine includes the following target types in OCA operations:

> enemy air defense systems (aircraft, antiaircraft artillery [AAA], and SAMs), airfields, and supporting

> infrastructure; theater missiles (TMs), ground-, sea-, and air-based launch platforms, and supporting infrastructure; as well as command, control, communications, computers, and intelligence (C4I) nodes.[10]

OCA missions may include fighter sweeps to destroy enemy aircraft in flight, direct attacks on enemy airfields and missile launch sites, and engagement of boosting TBMs.

Defensive Counterair (DCA) operations, on the other hand, aim to destroy enemy threats which penetrate friendly airspace.

> The objective of defensive counterair (DCA) is to protect friendly forces and vital interests from enemy air and missile attacks and is synonymous with air defense. DCA consists of active and passive air defense operations including all defensive measures designed to destroy attacking enemy air and missile threats or to nullify or reduce the effectiveness of such attacks should they escape destruction. The basic active defense criteria to detect, identify, intercept, and destroy remains the same for air and missile threats.[11]

Like TMD, DCA operations include both active and passive defensive measures. While the passive defensive measures are the same, active defense is different. Unlike TMD, which only addresses theater missiles, Air Force counterair missions attempt to destroy both enemy aircraft and missiles.

As depicted in Figure 2, the Air Force views TMD as an integral part of counterair operations. Missiles are no different than air-breathing threats; they are just another threat that must be dealt with. Countering any threat that passes through the air is seen as an Air Force mission. TMD

attack operations against a TEL or parked cruise missile carrier are no different than surface attack missions carried out under OCA. The objective is the same, regardless of the threat -- take the fight to the enemy and destroy his capability before it can be used against friendly forces. TMD active defense against an incoming TBM or cruise missile is defensive counterair, plain and simple. According to the Air Force, there is no distinction between Counterair and Theater Missile Defense.

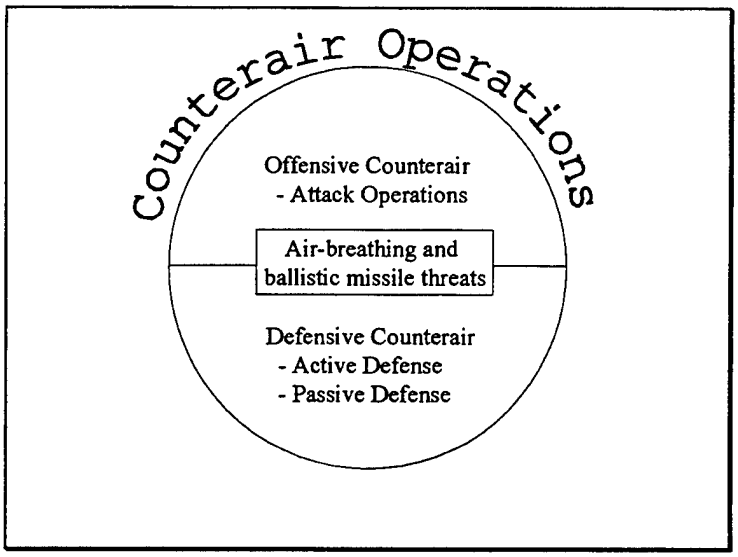

Figure 2. Air Force View

To the contrary, the Army views portions of TMD as distinct and separate from counterair (also called theater air defense) operations, while agreeing that other TMD aspects do fit with the Air Force view (see Figure 3.).

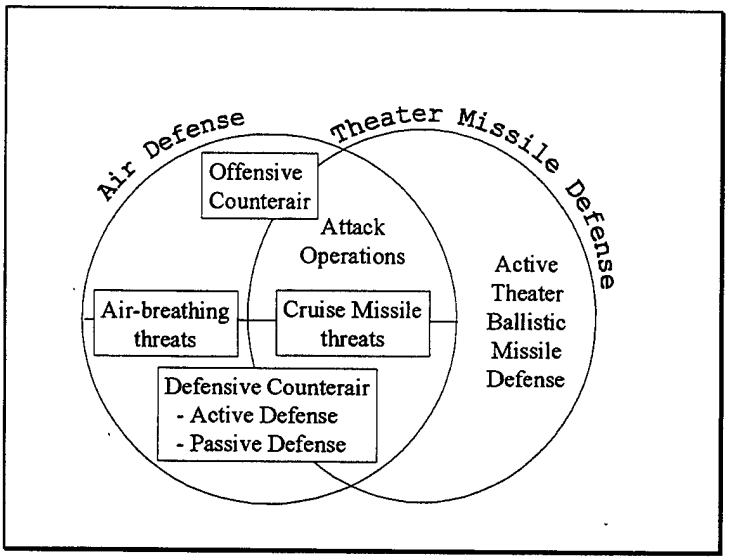

Figure 3. Army View

Army Field Manual 44-100, *US Army Air Defense Operations*, notes that TMD attack operations are not a unique mission. The field manual states, "Rather, TMD attack operations are a part of strategic attack and air interdiction."[12] Destroying a threat before it can be employed is an offensive counterair mission, regardless of whether the threat is a ballistic missile, an aircraft, an artillery tube, or any other target.

The Army also agrees that cruise missiles and unmanned aerial vehicles are to be treated as manned aircraft. Despite the difference between manned and unmanned, these threats all rely on aerodynamics to maneuver. They can attack from any azimuth, can employ stealth technology, and can change direction suddenly and often. Defenses against these air-breathing threats should, therefore, be the same. Field Manual 44-100 points out that,

> In general, cruise missiles and UAVs should come under the ROE established for manned aircraft. Due to the similarity of cruise missiles and UAVs to manned aircraft, appropriate ROE must be established to deal with that potential threat.[13]

While there are similarities between cruise and air-to-surface missiles and aircraft, defending against TBMs is totally different. ADA magazine highlights some of the problems faced when defending against TBMs:

> Tactical ballistic missiles are inherently difficult to defend against. Characteristics that increase tactical ballistic missile effectiveness include a reduced radar cross section, all-weather capability, terminal velocity, reduced notification time for defending forces and a variety of difficult-to-kill warheads.[14]

The U.S. Army War College's JFLCC Primer goes further to suggest that, due to the difficulty in defending against TBMs, active ballistic missile defense is totally separate from other air defense missions.

> Theater Missile Defense is similar but distinct from Air Defense. Operations to protect the force from missile threats are fundamentally different from those taken to defend from the counterair threat. TMD threats require unique and highly responsive command and control structures that are separate from the TACS [Theater Air Control System].[15]

Field Manual 44-100 echoes this sentiment:

> Theater missile defense and theater counterair (theater air defense) operations are separate but highly related mission areas. As discussed earlier, counterair targets are manned aircraft and UAVs, while TMD targets are comprised of ballistic, cruise, and air-to-surface missiles. Operations to protect the force from theater missiles differ fundamentally from

those actions taken to defend against the counterair threat.[16]

The overall Army view is that, while many areas of counterair operations and theater missile defense overlap, active defense against TBMs is a unique mission that falls outside air defense. Cruise missile threats can be engaged as part of counterair operations, but active TBM defense needs to be handled differently.

JOINT TASK FORCE FUNCTIONS

Evolving from the different views of how TMD relates to counterair operations, the Services see assignment of specific air defense functions to the JFC's staff differently.

The component with the preponderance of ground forces, usually the Army or Marine commander, is assigned as the Joint Force Land Component Commander (JFLCC). The component with the preponderance of naval forces is the Joint Force Maritime Component Commander (JFMCC). The commander with the "preponderance of air assets and the capability to plan, task, and control joint air operations"[17] (could be Navy, Marine, or Air Force) is normally designated the Joint Force Air Component Commander (JFACC).

These functional commanders may be assigned additional responsibilities by the JFC. In particular, the Area Air

Defense Commander (AADC) and Airspace Control Authority (ACA) deal directly with air and missile defense issues.

The lead commander in the counterair/missile defense arena is the JFACC. Air Force doctrine includes air defense, airspace control, and ISR [Intelligence, Surveillance, and Reconnaissance] among the JFACC's functions.[18] Additionally, "the JFACC allocates air sorties to both offensive and defensive counterair, and TMD attack operations."[19]

> Although some counterair assets are assigned to different components, the JFACC is normally the supported commander for counterair operations. Routinely, the JFACC has OPCON, tactical control (TACON), and/or a supported relationship to conduct counterair operations employing augmenting forces that remain assigned to other components.[20]

While the JFACC makes allocation recommendations for both offensive counterair and defensive counterair missions, he focuses his efforts on the offensive use of his air assets. Airpower, inherently offensive given its speed, range, and flexibility, can bring the battle directly to the enemy, destroying threats before they can be brought to bear against friendly forces.

While the JFACC is the supported commander for overall counterair operations, he is not always the supported commander for missions that strike ground targets (to include missions against TM assets, i.e., Theater Missile Defense attack operations). The land and maritime component commanders are the

supported commanders for any surface attack operations within their areas of operations (AOs); therefore, the JFACC must fully coordinate those missions with the respective commander. However, for surface attack outside one of the other commanders' AOs, the JFACC may be the supported commander. Joint Publication 3-01.5, *Doctrine for Joint Theater Missile Defense*, clarifies the attack operations supporting responsibilities as follows:

> The JFC will normally assign responsibility for the planning and execution of JTMD [Joint Theater Missile Defense] attack operations outside the other component commanders AOs to the JFACC. Since the location of these AOs may change with the maneuver of forces or with changes in JFC guidance, the JFACC should also plan for and maintain visibility on the theater/JOA [Joint Operations Area]-wide attack operations effort. This will ensure the JFACC is prepared to support the other component commanders when, for example, they request JFACC support in conducting JTMD attack operations within their AOs. The JFACC plans and executes attack operations in the theater/JOA based on JFC guidance.[21]

By staying closely involved with all surface attack operations, the JFACC can keep the theater-wide target database up to date, knowing which air and missile threats remain and which have been engaged. This information is highly valuable to the commanders who must direct the defensive counterair operations.

Given the importance of air defense, the JFC may also designate an Area Air Defense Commander (AADC) to conduct the air defense battle. Responsible for integrating the entire air

defense effort, the AADC should be the component commander with the preponderance of air defense assets as well as the C4I capability to plan and execute integrated air defense operations with other air operations.[22]

> The AADC is the central control agent responsible for the integration of all air defense efforts in the theater of operations. The AADC develops engagement procedures for all air defense weapons based on the JFC's objectives and guidance.[23]

The AADC controls the airborne defensive assets as well as ground-based or sea-based defenses. While defensive fighter aircraft may concentrate against airborne threats, other systems like PATRIOT and the Navy AEGIS cruisers engage both air-breathing and ballistic missile threats. The AADC must develop procedures, rules of engagement, and deployment schemes to best utilize the capabilities of each system. The AADC controls the defensive effort, but delegates execution to the defensive units. "Centralized control allows commanders to focus on those priorities that lead to victory."[24] "Delegation of execution authority to responsible and capable lower-level commanders is essential to achieve span of control and to foster initiative, situational responsiveness, and tactical flexibility."[25]

Army doctrine gives an indication of how the AADC may establish a linked defensive network, under control of one commander, while delegating execution to lower levels.

The AADC may create air defense regions and appoint a commander for each. The region air defense commanders (RADCs) may be selected from any service component. The RADC is fully responsible for integrating defensive counterair operations throughout the region. The control and reporting center (CRC) supervises the surveillance and control activities of subordinate radar elements, provides means for air traffic identification, and integrates region defensive counterair operations.[26]

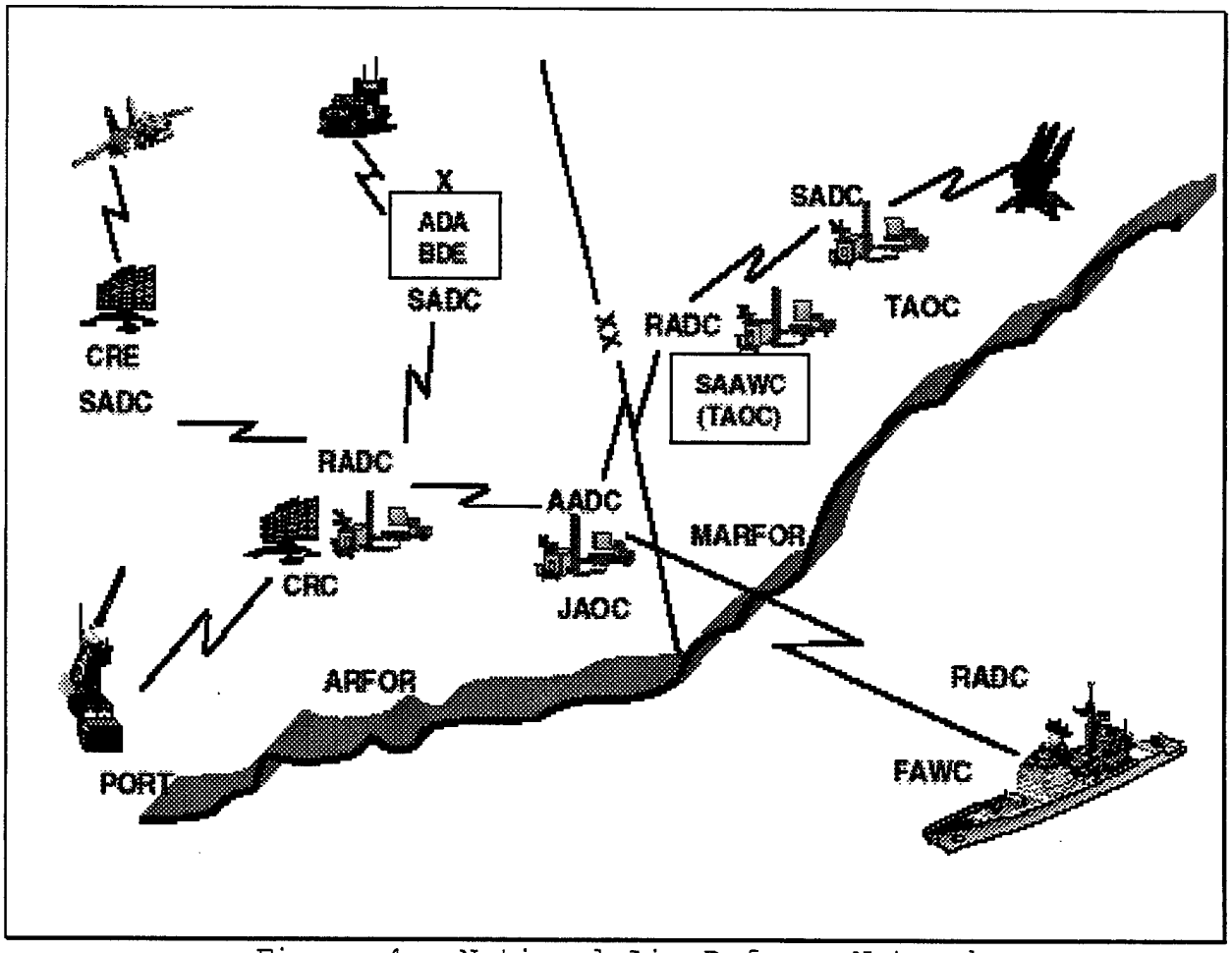

Figure 4. Notional Air Defense Network

Figure 4 represents a notional air defense network incorporating defensive assets from all services under direct control of the AADC from the Joint Air Operations Center (JAOC).

The last functional position dealing with air defense and control of the air which must be discussed is the Airspace Control Authority (ACA). The ACA is responsible for establishing rules and procedures for determining friend from foe and airspace deconfliction. With various weapons systems poised to defend specific assets, regions, or areas of airspace, one individual should determine how best to parcel the airspace to maximize the defensive capability. Again, centralized control is essential to effective defense and control of the airspace. However, should our command and control architecture become impaired, established control procedures, put in place by the ACA, will allow the defensive net to remain functioning. Air Force doctrine illuminates this relationship as follows:

> Centralized control of all DCA assets, by the AADC, is the preferred method of operation. DCA weapon systems are normally capable of autonomous operations if centralized control fails or is not available. In the absence of centralized control, procedural means are used to permit the safe passage of friendly aircraft and to enable the effective use of air defense weapons. Since many DCA assets are owned by different Services and allies, integration, coordination, and normal airspace control procedures are required to enhance the synergistic capabilities of the various systems.[27]

Given the direct connection between air defense and airspace control, the AADC and ACA functions are normally assigned to one individual. Additionally, considering the close relationship between offensive counterair, defensive counterair, and theater

missile defense, it is quite common for the JFACC to be assigned both AADC and ACA missions and responsibilities.

There is disagreement between the Army and Air Force over whether the JFACC "should" also conduct AADC/ACA functions or whether the JFACC "may" conduct those missions. Army Field Manual 100-13, September 1996; Joint Publication 3-01.5, February 1996; and Joint Publication 3-52, July 1995, all indicate the JFC "may" assign JFACC, AADC, and ACA responsibilities to a single individual.[28] The Joint Force Commander has the latitude to set up his staff however he sees fit to address the requirements of the situation.

More recent Joint and Air Force publications - Air Force Doctrine Document 2-1.1, May 1998, and Joint Publication 3-01 (draft) - actually recommend that the JFACC "should" be assigned AADC/ACA duties.[29]

The Navy does not seem to have an issue with the JFACC, AADC, ACA assignment. During initial entry operations, especially in an immature theater, a Naval commander may very well be the JFACC and the AADC/ACA because he will have the preponderance of both air and air defense assets. AEGIS cruisers can protect lodgment areas and ports of debarkation from both air and missile threats while carrier air provides ground attack opportunities and additional air defense. As the theater matures, the air-related functions may transition ashore

as the Air Force and Army arrive in force. In preparation for these roles, the Navy is developing AADC capability and space on its AEGIS-equipped cruisers.

> The Navy has already developed much of the command and control needed to conduct TBMD and has extensive experience in coordinating widely disbursed forces in integrated air defense. Several battle management and communications enhancements are entering fleet service including Joint Tactical Information Distribution System (JTIDS), the Cooperative Engagement Capability (CEC), and the developmental Area Air Defense Commander (AADC) capability.[30]

Specific capabilities being incorporated by the Navy are addressed below:

> Planning has commenced on the development of an Area Air Defense Commander (AADC) capability for AEGIS cruisers. This capability would include computer decision aids and planning tools to allow pre-conflict air defense planning; stationing of air defense assets ashore and afloat to create the best possible defense network; and the operational tools necessary to permit at-sea Joint Air Defense Command in real time during hostilities. Requirements for the AADC are now being developed so that future Naval Forces will have the capability to command Joint Forces in an integrated air defense environment.[31]

There is no doubt that successful conduct of the air defense mission requires integration of all available air defense assets. Whether these assets come from the Air Force, Navy, Army, Marines, or a coalition partner, integration does not mean giving up control of those forces to another commander. Joint Publication 3-01.5 reminds us,

> Active defense forces are under the operational control of their component commanders, who employ

> these forces under the weapons control procedures and measures established by the AADC and approved by the JFC.[32]

Control appears to be at the heart of the debate over who should be in charge of the Theater Ballistic Missile battle. The Air Force seeks to control the aerospace medium and anything that flies through it. Counterair is an Air Force mission and TMD is just a subset of that mission. On the other hand, the Army "owns" the only anti-TBM-capable system in the field today - PATRIOT - and wants to control its asset, not watch some other Service control it. Additionally, the Army has the experience of Desert Storm and dozens of air and missile defense exercises to build on.

Regardless of the command and control architecture the Joint Force Commander may envision, the component commanders tend to have liaisons on everyone else's staffs. Since the current doctrine is inclined to dual hat the JFACC as the AADC, the Army has specific units that ensure Army Forces (ARFOR) missile defense concerns are adequately addressed. One such unit, the Battlefield Coordination Detachment (BCD), is assigned to the JFACC staff and

> eases coordination between ARFOR air and missile defense operations and the JFACC staff when the JFACC is also the AADC. The BCD helps the JFACC staff integrate JFACC defensive counterair operations with ground air defense systems. This BCD function is key to effective air defense and to precluding fratricide.[33]

In addition to the BCD, the Army has fielded the 32d Army Air and Missile Defense Command (AAMDC). The AAMDC commander "performs critical theater-level air and missile defense planning, integration, coordination, and execution functions" for the JFLCC and ARFOR. The AAMDC commander is also the echelon above corps (EAC) air defense artillery commander, responsible for integrating Army assets and concerns into joint counterair operations.[34]

The former commander of the Army's Space and Strategic Defense Command, Lt Gen Jay Garner, highlights the need for an overall missile defense commander below:

> [O]ne mission need has remained prominent - integrating joint theater missile defense requires the direction of a senior joint leader who must have the authority to coordinate the theater missile defense effort for the joint-force commander. Joint-force theater missile defense coordinators should be the focal point for planning, coordinating and "deconflicting" the overall theater missile defense operation.[35]

General Garner thinks the joint missile defense commander must adopt a theaterwide perspective and not get tied up with Service parochialism. What he is suggesting sounds very much like the role of the AADC, but perhaps an AADC who focuses on missile defense only, instead of air and missile defense.

As long as weapons systems can be used to defend against both air-breathing and ballistic missile threats, the control issue will remain. The Army has not expressed an interest in

controlling the placement and activity of defensive fighter aircraft - that is an area of Air Force expertise. Army air defense artillery can deny an enemy use of friendly airspace (i.e., airspace control); therefore, it falls under the overall counterair mission, usually under control of an airman.

Once anti-TBM-specific weapons systems are fielded, the debate over the appropriate control authority may take the path suggested by General Garner. If fielded, Airborne Laser, THAAD, and Navy Theater Wide Defense are designed to be anti-TBM systems only - with no anti-air capabilities. An airman's claim to control these assets will not stand up to scrutiny; a missile defense expert's will. Since the Army has the only experience in anti-TBM active defense operations, it appears to be the most qualified to do so. Their claim to primacy in active TBMD is valid.

To recap, the Air Force view is that the JFACC, normally an airman, commands air operations, to include counterair operations. Theater Missile Defense is a subset of counterair operations; therefore, it also falls under the JFACC's purview. Given the JFACC's primacy in air operations, air defense (namely the AADC) and airspace control (the ACA) should also be consolidated under one functional commander, the JFACC.

The Army agrees that the JFACC should run offensive air operations and the AADC should run defensive air operations.

Given the direct linkage between the AADC and ACA, the AADC should also carry out ACA functions. However, the JFACC and AADC should not be dual hatted to a single individual. The airman will focus on offense, leaving the defensive functions to a lesser subordinate. The Army sees the TMD battle as too important and too costly, if handled incorrectly, to be passed off to a subordinate. Give that mission - TMD - to the missile experts, the Army.

RECOMMENDATIONS

Many of the initial problems associated with the question of who should control the TBM battle can be traced to terminology differences. The Services tried to work with definitions of theater missiles and theater missile defense, but these arbitrary definitions failed to adequately address the differences with the target set. Cruise missiles, air-to-surface missiles, and theater ballistic missiles, while all missiles, demand different defensive measures. Air threats can be best delineated into air-breathing threats and ballistic missile threats. Air-breathers like cruise missiles, unmanned aerial vehicles, remotely piloted vehicles, and aircraft, both rotary wing and fixed wing, are powered by engines which mix fuel with air. Whether driven by propeller, rotor, or jet propulsion, these air-breathing threats have many of the same

characteristics: slow speed (in comparison to ballistic missiles); the ability to change altitude, heading, and speed; the ability to terrain mask; and the ability to blend in with friendly air assets.

Ballistic missiles, on the other hand, are very fast, easy to identify, and hard to intercept. Given this difference in characteristics, one must differentiate the threats as either air-breathers or ballistic missiles. The distinction is not between TMD and air defense, but between TBMD and air defense. Given the great difference between ballistic missiles and other "theater missiles," the Armed Forces need to eliminate all reference to the arbitrary definition of theater missiles and the associated term theater missile defense.

Eliminating all reference to TMD will also terminate talk of the "pillars" of TMD. Attack operations against air-breathing threats are nothing more than offensive counterair missions. Attack operations against ballistic missiles and their supporting infrastructure are either surface attack or interdiction missions. It is no different than attacking an enemy's artillery. The consequences, and, therefore, the urgency, of a successful mission may be greater, given the potential to carry large WMD payloads, but the mission is the same.

While the term attack operations should no longer be used, passive defense remains unchanged. It doesn't matter if you're defending against a ballistic missile, crop duster, or UAV, commanders must take actions to protect forces and assets under their control.

Although passive defense does not change and attack operations are subsumed as offensive counterair operations, active defense remains differentiated by target type. Active defense against air-breathing threats can be either offensive or defensive counterair operations, defending on whether we take the fight to the enemy or wait for him to enter our airspace.

The overall counterair mission needs to be run by the JFACC, who should also serve as the AADC and ACA. Unity of command and centralized control greatly enhance the JFACC's ability to gain and maintain control of the air. A single air-minded commander encourages effective employment of offensive and defensive air assets while minimizing the possibility of fratricide. Control of ground- and sea-based air defense assets enables the JFACC-AADC-ACA to complete the air defense architecture and deny use of the air to enemy airpower.

While active defense against air-breathing threats falls within JFACC-run counterair operations, active defense against ballistic missiles (active TBMD) is such a distinct and critical

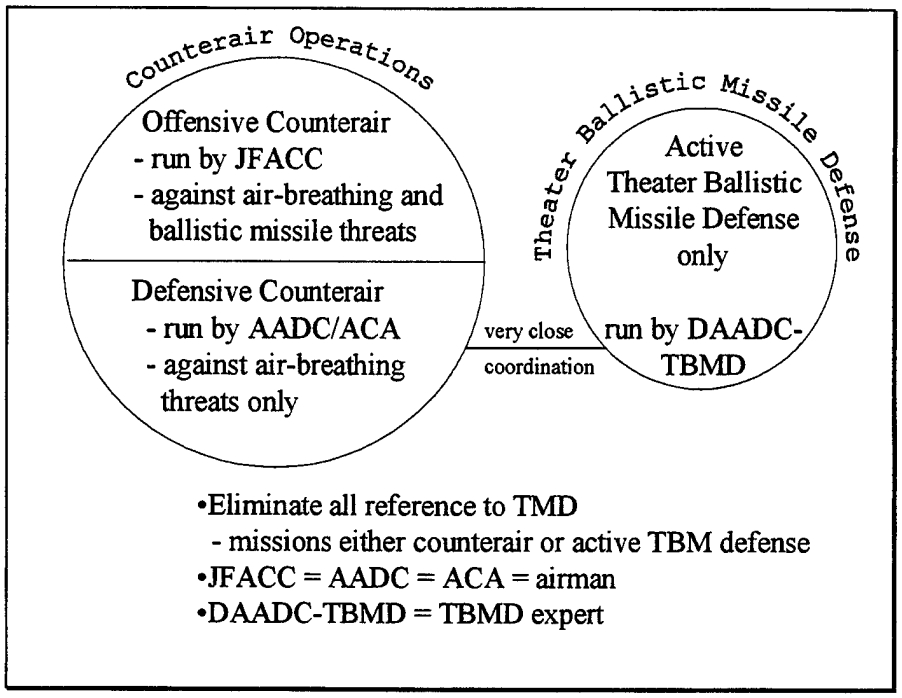

Figure 5. A New Perspective

mission area that it should not be considered part of counterair operations. A separate staff agency should be given this mission. However, given the dual-use nature of current generation air defense assets, this staff entity must be tied very closely to the AADC.

To address the specific characteristics of TBMs, the AADC should establish a Deputy AADC for theater ballistic missile defense. This DAADC-TBMD should have extensive experience with anti-TBM defenses and will probably be either Army or Navy. The DAADC-TBMD will control the defense against TBMs while staying fully involved with the overall air defense operation and may be co-located with the AADC in the Air Operations Center, may be afloat on an AEGIS cruiser, or may be at the senior level air

defense artillery tactical operations center. The positioning of the DAADC-TBMD is not important; the functioning is.

This dedicated commander must focus on the unique requirements of TBMD. While the JFACC focuses on counterair operations, a separate commander - the DAADC-TBMD - can give full attention to one of the most stressing threats seen on the battlefields of today and tomorrow: the ballistic missile. Close coordination between the JFACC-AADC-ACA and the DAADC-TBMD will ensure most effective utilization of dual use defensive assets as well as proper positioning of anti-TBM assets.

The JFACC will attempt to destroy TBMs before they are used, but he will rely on the DAADC-TBMD's expertise to intercept any in-flight theater ballistic missile, protecting friendly forces and critical assets from harm.

It is time for all the Services to agree to a common air and missile defense framework. An airman should run the air operations, but an anti-ballistic missile expert should run the TBM defense. The color of one's uniform should not make a difference; the level of experience and expertise is the overriding factor that will lead to a comprehensive and effective defense protecting our forces, assets, and national interests.

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